## In the Claims

Claim 1. (Currently Amended) A method of imaging, measuring and displaying a 3-dimensional dose distribution of an energy field in a translucent 3-dimensional object comprising:

- (a) applying an energy field to the object such that the optical properties are changed upon receipt of the energy;
- (b) optically scanning the object at various positions and angles to provide a series of 2-dimensional representations of the object;
- (c) detecting the measuring light projection data indicative of optical changes in the object;
- (d) calibrating the optical change in the object <u>transmitted through the object by x-rays</u> to the dose of the energy corresponding to each position scan;
- (e) mapping the dose of the energy in the object transmitted through the object, and
- (f) visually recording the summation of said 2-dimensional representations on an image display receiver <u>using said energy transmitted through the object</u> comprising a radiation activated metal salt of a crystalline, thermochromic polyacetylene having a conjugated structure uniformly distributed in a rigid or high density semi-solid matrix by a color alteration due to polymerization of the activated polyacetylene to provide a permanent, 3-dimensional image of the object in high spatial resolution.

Claims 2. - 7. (Cancelled)

Claim 8. (Original) The method of claim 1 wherein said crystalline polyacetylene is a  $C_2$  to  $C_{10}$  radiochromic monomer having the formula:

$$A-(CH_2)_m-(C\equiv C-)_p-(CH_2)_n-B$$

wherein m and n each independently have a value of from 0 to 30; p has a value of 2 to 4; A and B each independently are R,  $OR_1$ , OH,  $COOR_2$ ,  $CONR_3R_4$  or  $(CH_2)_r$ -O-CO- $NR_5R_6$  or a metal salt of the acid or ester; and where R,  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$  and  $R_6$  are each independently hydrogen or  $C_1$  to  $C_{12}$  alkyl or aryl and r has a value of from 1 to 4.

Claim 9. (Original) The method of claim 1 wherein the metal salt of the crystalline polyacetylene is a lithium salt.